2023

COMPUTER SCIENCE

(Honours Elective)

Paper : CSC-HE-6016

(Network Programming)

Full Marks : 60

Time : Three hours

The figures in the margin indicate full marks for the questions.

1. Answer the following questions as directed : 1×7=7

   (a) SCTP is a connectionless protocol.
   *(State True **or** False)*

   (b) UDP doesn't offer an acknowledgment mechanism. *(State True **or** False)*

   (c) The TCP/IP socket includes IP address and _____. *(Fill in the blank)*

(d) IO multiplexing is used

   (i) when server handles both TCP and UDP

   (ii) when client handles multiple sockets at the sametime

   (iii) None of the above

   (iv) All of the above (i) and (ii)
   (Choose the correct option)

(e) HTTP is an application protocol that runs on top of the TCP/IP suite.
   *(State True **or** False)*

(f) Remote login is implemented using Telnet. *(State True **or** False)*

(g) _____ is used for remote network administration. *(Fill in the blank)*

2. Define the following terms : 2×4=8

   (a) UDP

   (b) Address lookup

   (c) Remote login

   (d) Network byte order

3. Answer the following questions : *(any three)*
   5×3=15

   (a) Differentiate between TCP and SCTP.

   (b) Why UDP is considered to be unreliable ?

   (c) Write the use of the following commands :

      (i) ifconfig

      (ii) traceroute

   (d) Explain getsockopt and setsockopt subroutines.

   (e) Explain the remote login procedure with Telnet.

4. Answer **any three** of the following questions : 10×3=30

   (a) What is TCP header ? Explain the fields of TCP header format.

   (b) Explain the three way handshake of TCP connection establishment with suitable diagrams.

(c) Write a TCP/IP client server program. Where client will send a string to the server and server send back reply to the client as "string is palindrome" *or* "string is not palindrome" ? Use loopback interface.

(d) Explain how I/O multiplexing is carried out using select and poll functions.

(e) Explain the functions of ntons( ), htonl( ), ntohs( ) and ntohl( ).

(f) Write short notes on : *(any two)*

    (i) HTTP

    (ii) Network manager in Linux

    (iii) Network debugging